

8.4 GLOBAL BEHAVIOR OF THE HEIGHT/SEASONAL STRUCTURE OF TIDES BETWEEN 40° and 60° LATITUDE

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The radars utilized are meteor (2), medium-frequency (2) and the new low-frequency (1) systems: analysis techniques have been exhaustively studied internally and comparatively and are not thought to affect the results. Emphasis is placed upon the new height-time contours of 24-, 12-h tidal amplitudes and phases, which best display height and seasonal structures; where possible high resolution (10 d) is used (Saskatoon), but all stations provide monthly mean resolution. At these latitudes the diurnal tide is generally smaller than the semidiurnal (≤ 10 m/s vs 10 - 30 m/s), and displays more variability. However, there is a tendency for vertical wavelengths and amplitudes to be larger during summer months. On occasions in winter and fall, wavelengths may be less than 50 km. The dominant semidiurnal tide shows significant regular seasonal structure; wavelengths are generally small (~ 50 km) in winter, large in summer (≥ 100 km), and these states are separated by rapid equinoctial transitions. There is some evidence for less regularity toward 40°. Coupling with mean winds is apparent. Data from earlier ATMAP campaigns are mentioned, and reasons for their inadequacies presented.

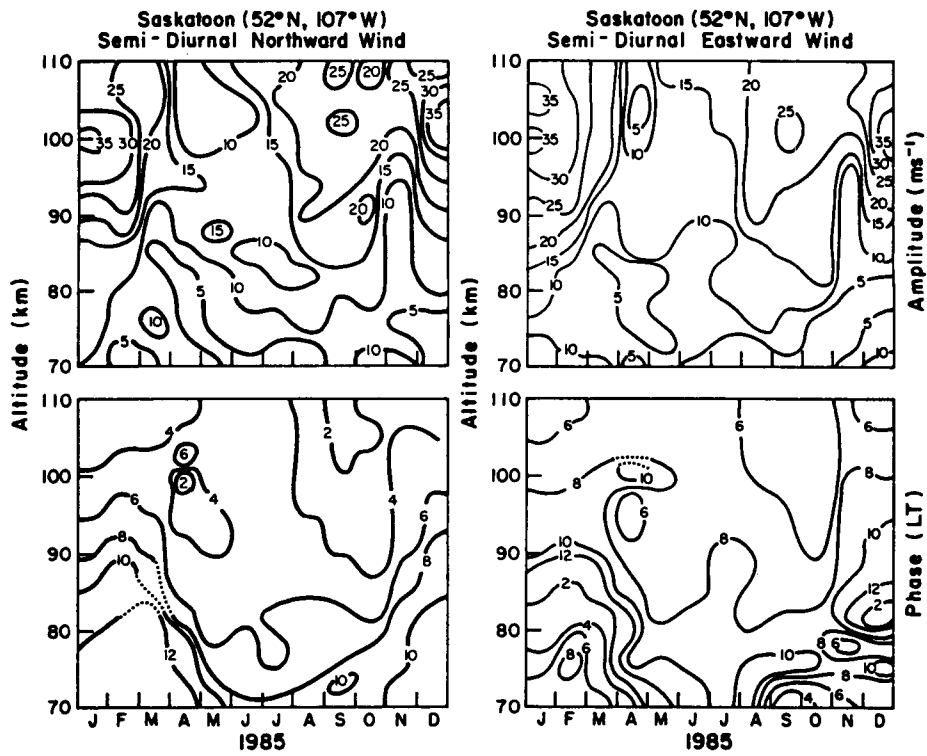


Figure 1. Semidiurnal tidal contours: Saskatoon 1985 (1 month resolution).

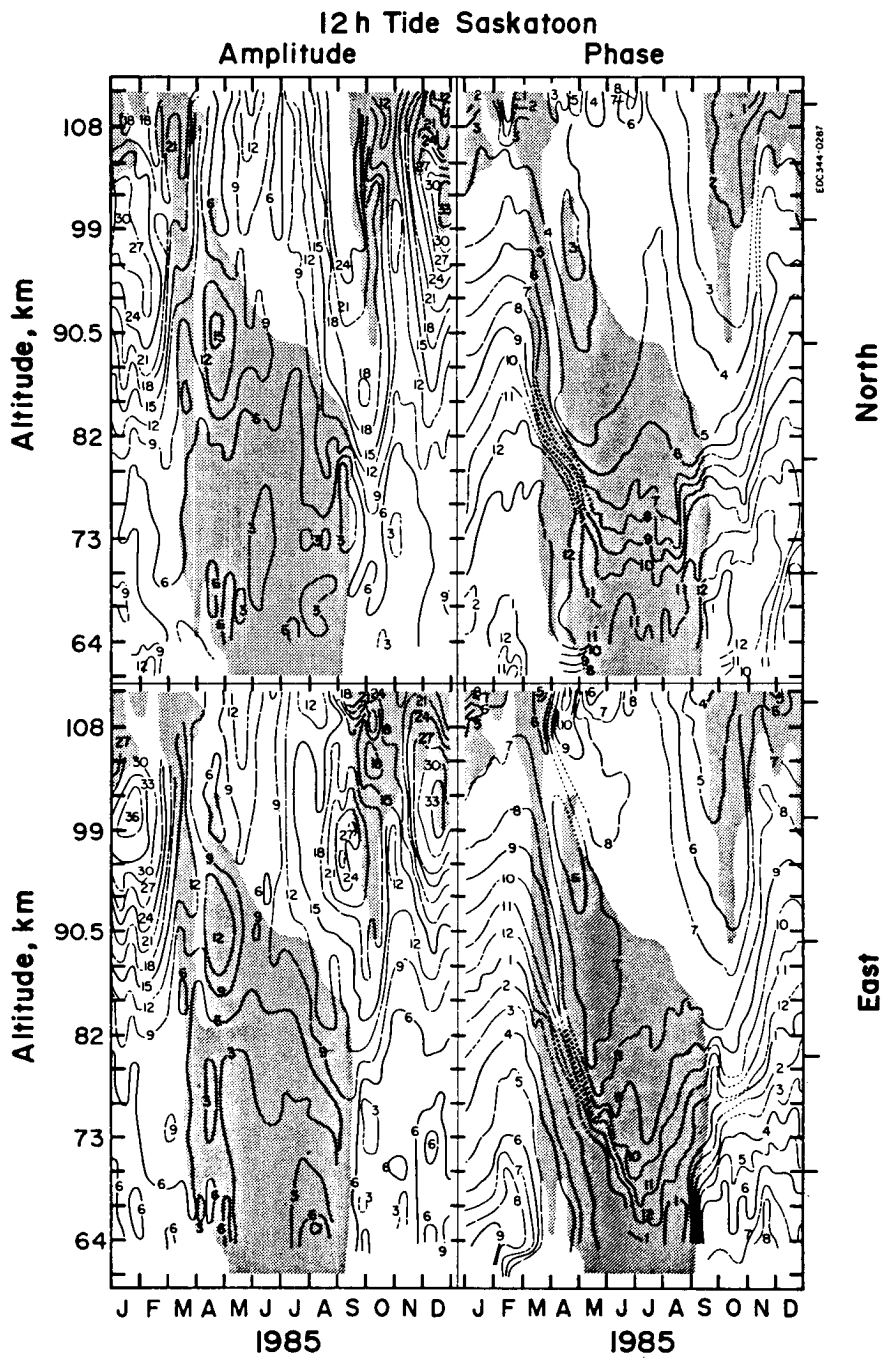


Figure 2. Semidiurnal tidal contours: Saskatoon 1985 (10 d resolution).

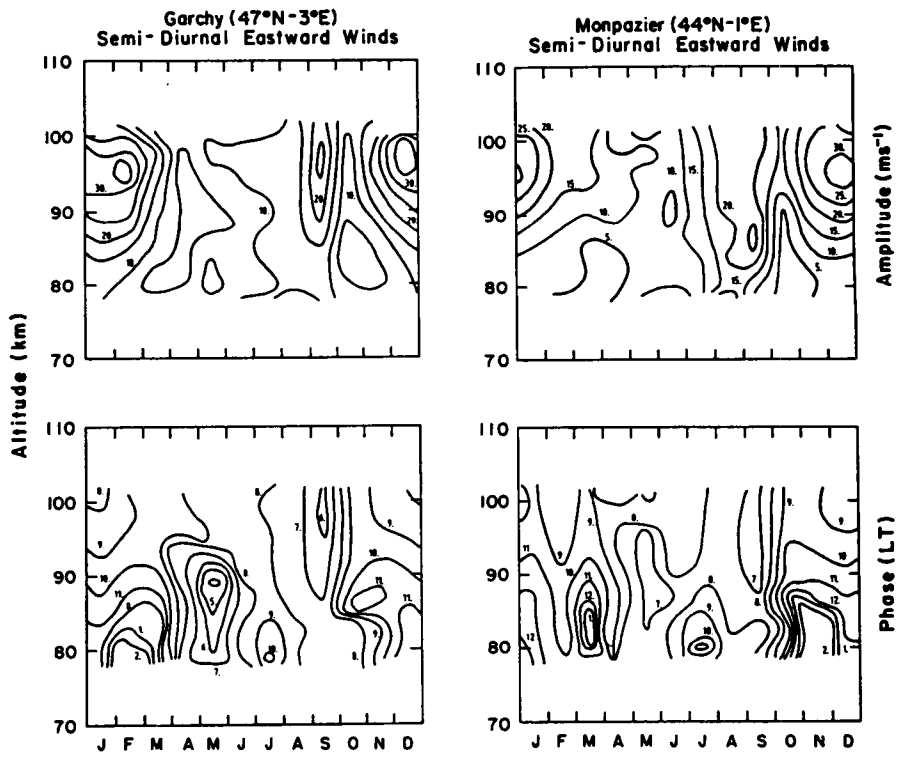


Figure 3. Semidiurnal tidal contours: Garchy 1970-76; Monpazier 1979-80.

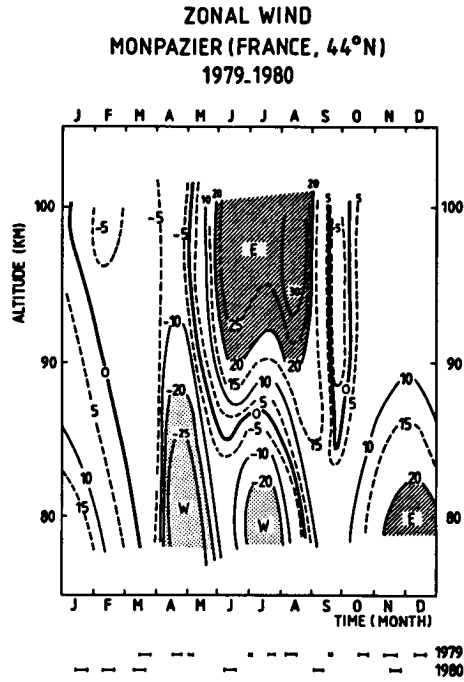


Figure 4. Zonal winds; Garchy and Monpazier.

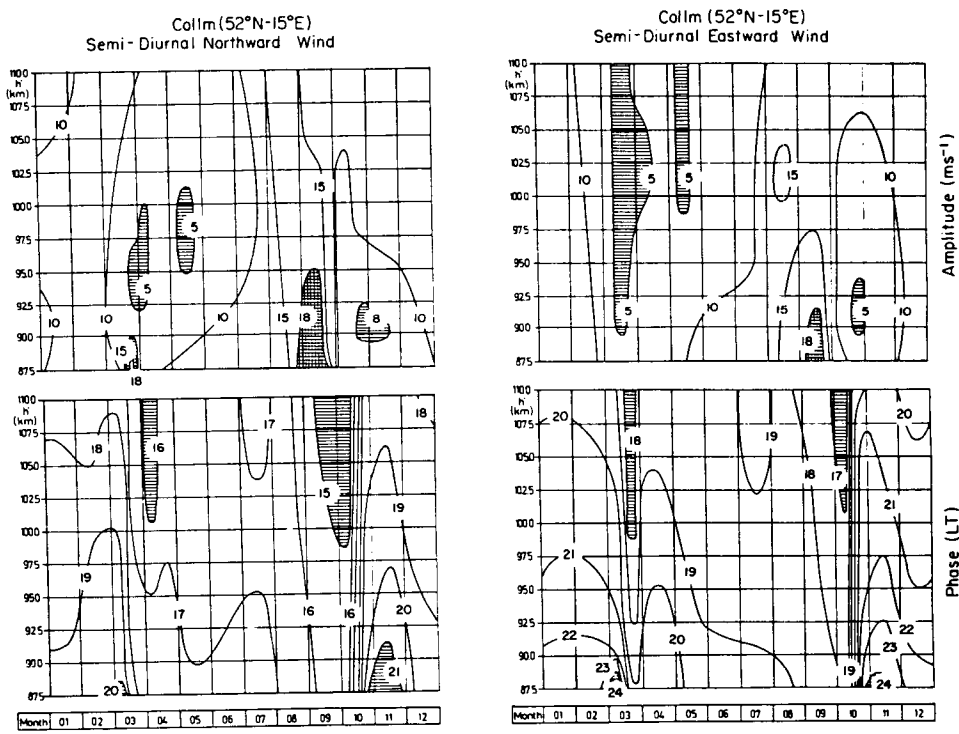


Figure 5. Semidiurnal tidal contours: Collm 1983-86.

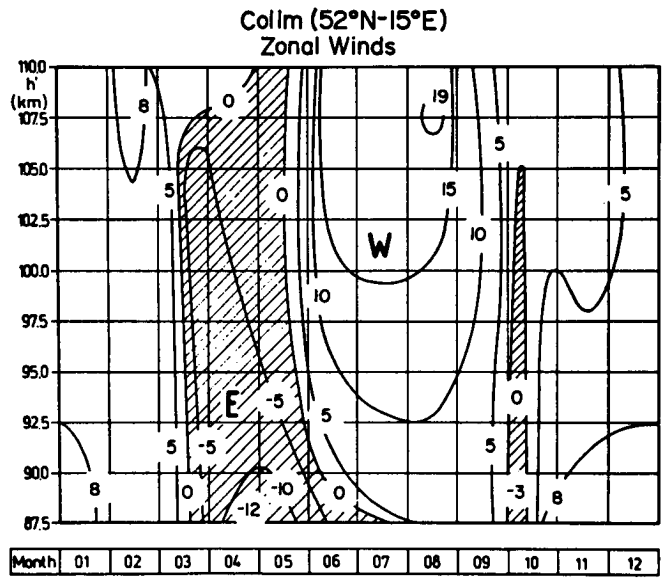


Figure 6. Zonal winds; Collm 1983-86.

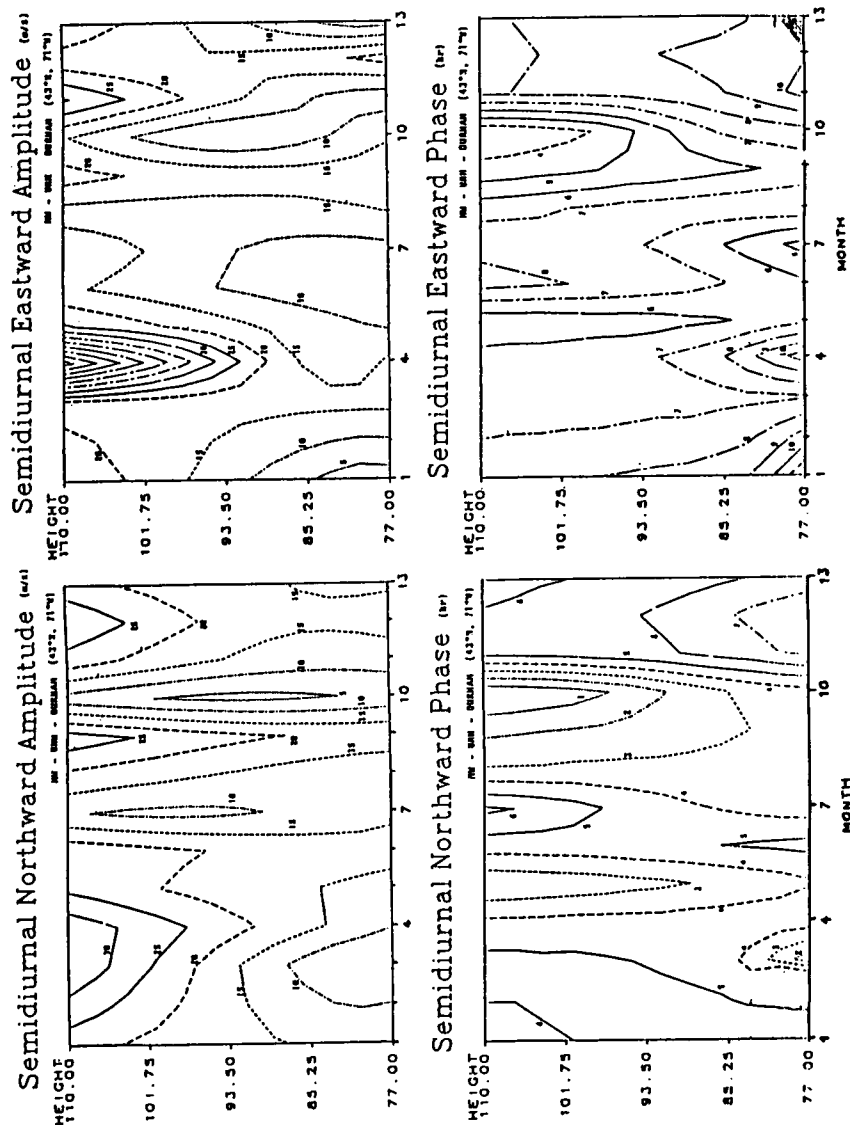


Figure 7. Semidiurnal tidal contours: Durham 1978-84.

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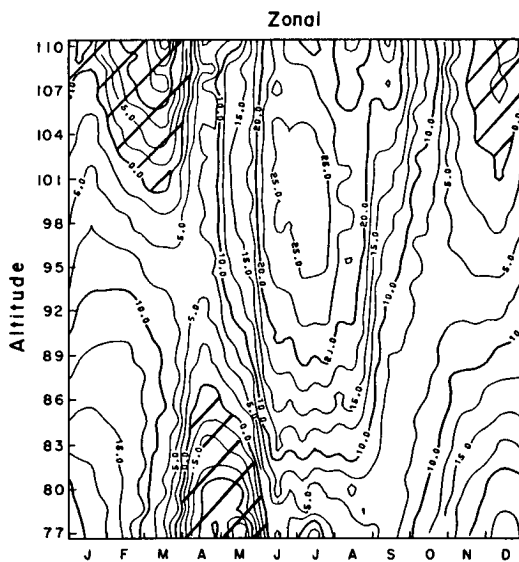


Figure 8. Zonal winds: Durham 1978-84.

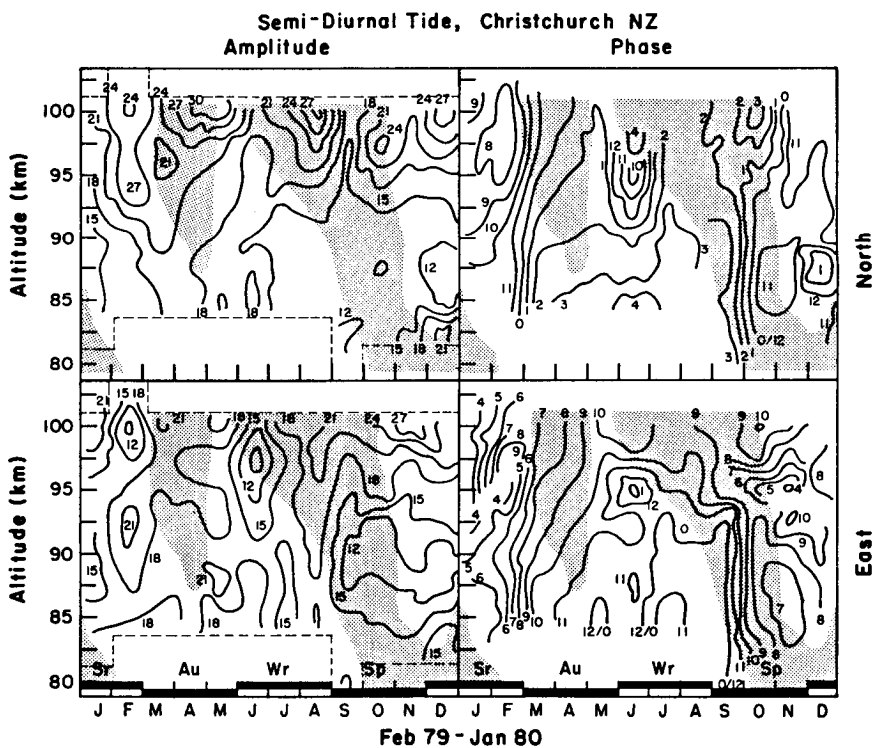


Figure 9. Semidiurnal tidal contours: Christchurch 1979-80.

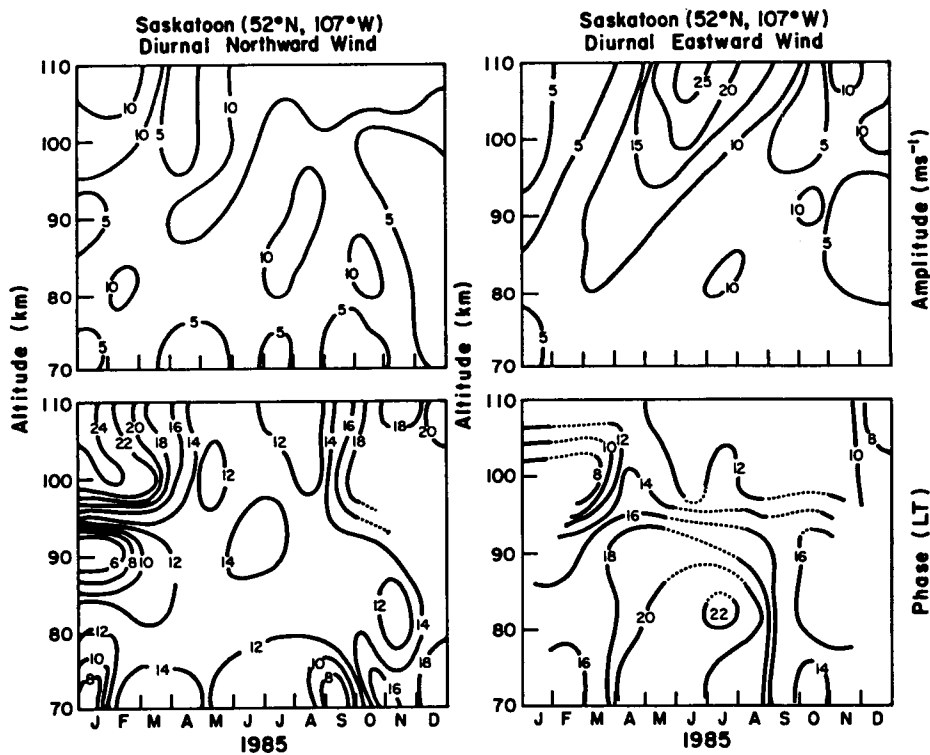


Figure 10. Diurnal tidal contours: Saskatoon 1985 (1 month resolution).

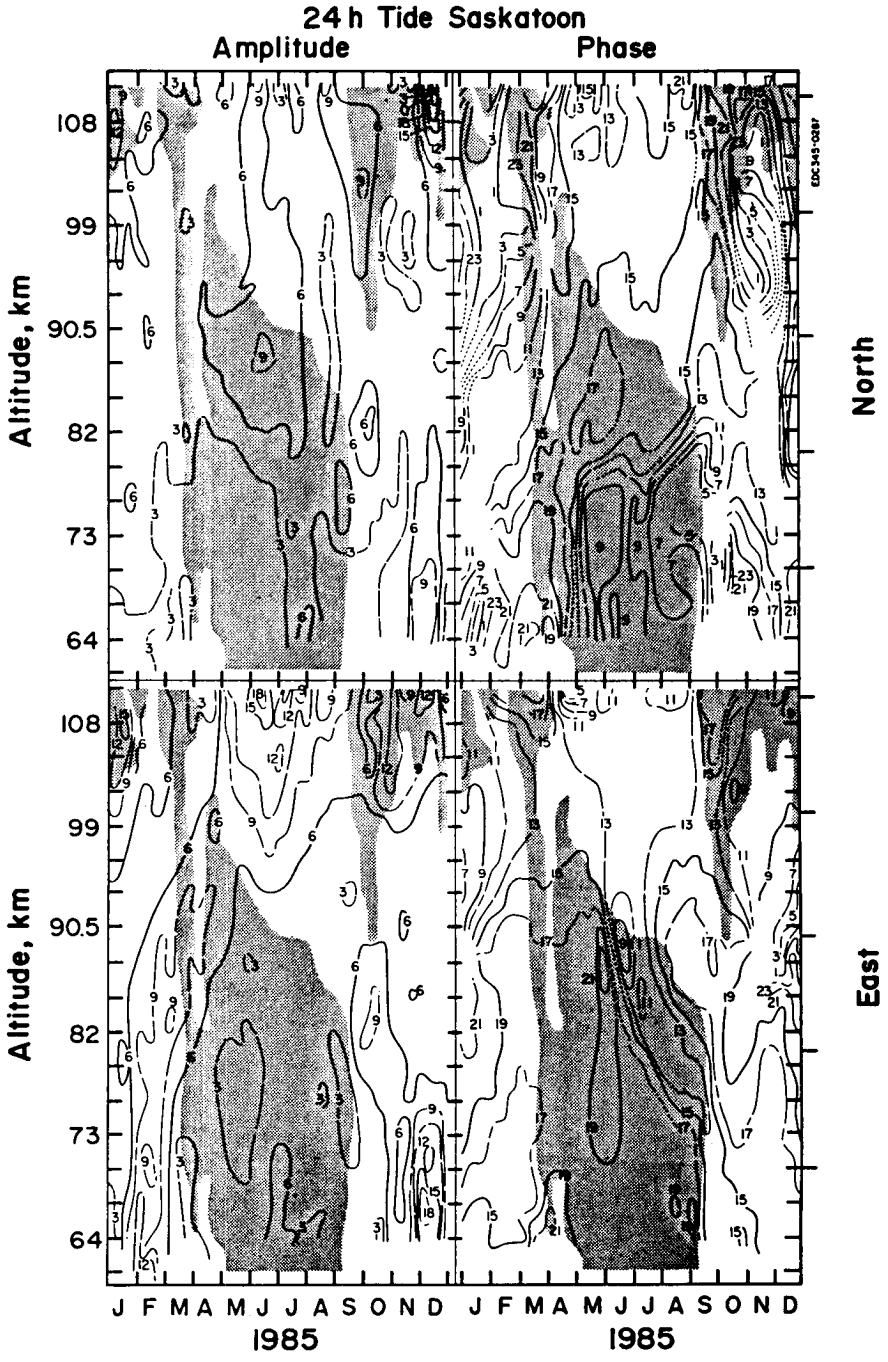


Figure 11. Diurnal tidal contours: Saskatoon 1985 (10 d resolution).

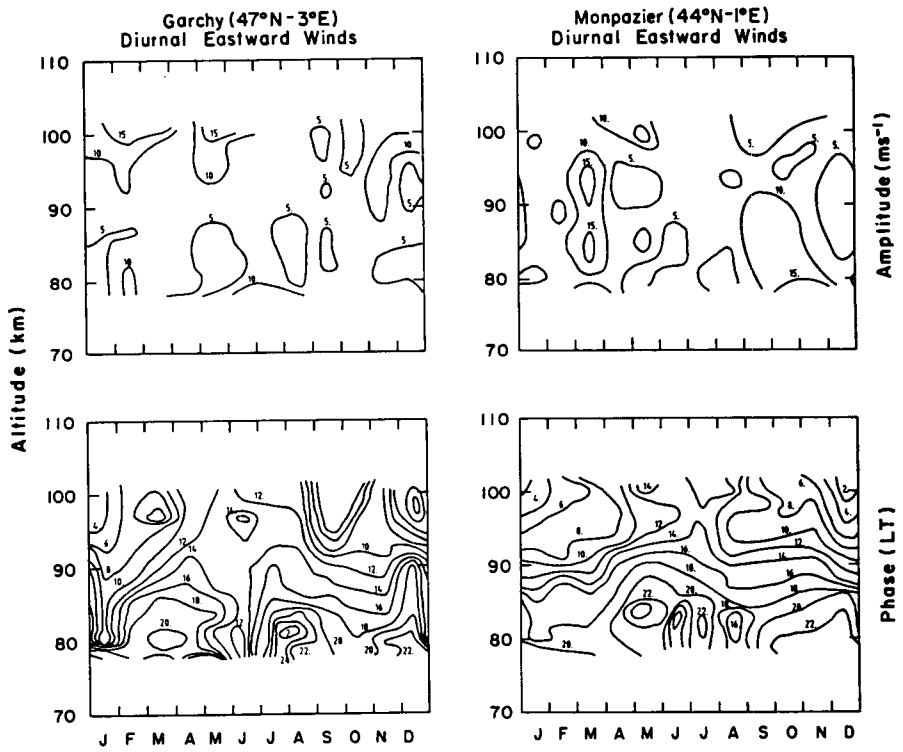


Figure 12. Diurnal tidal contours: Garchy 1970-76; Monpazier 1979-80.

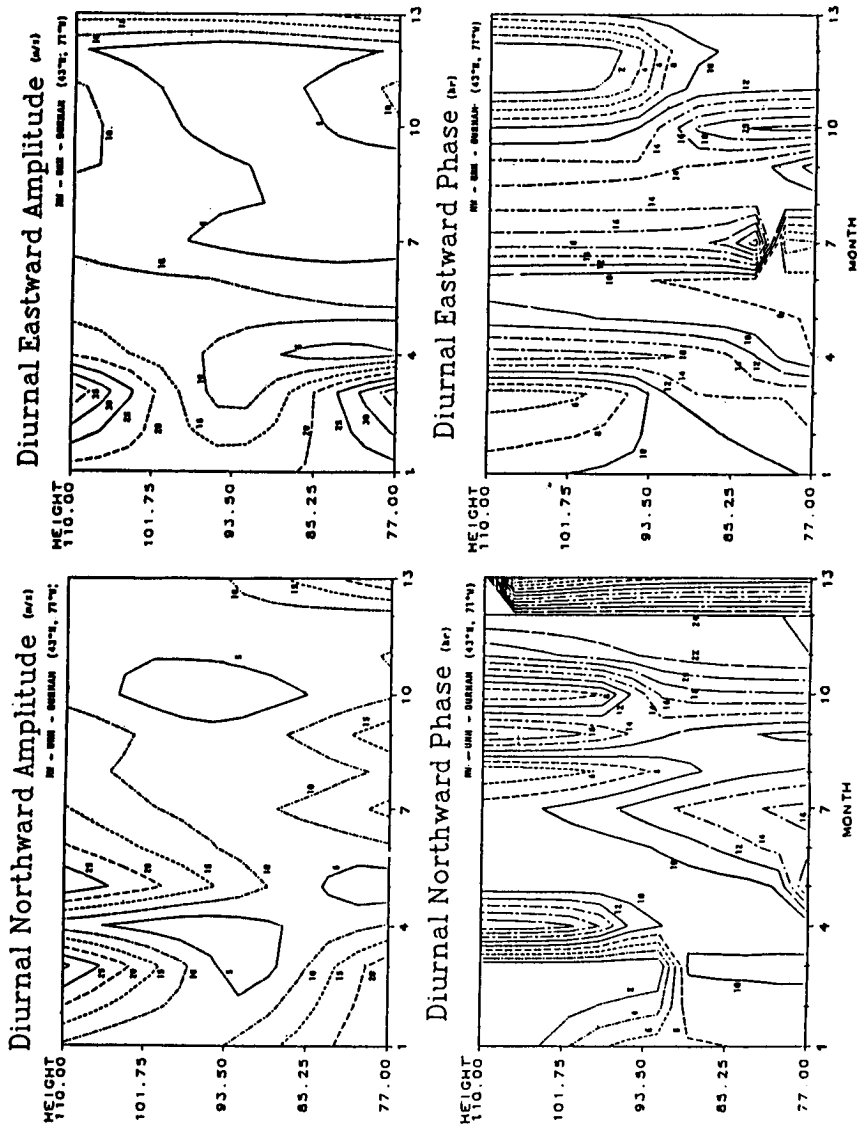


Figure 13. Diurnal tidal contours: Durham 1978-84.

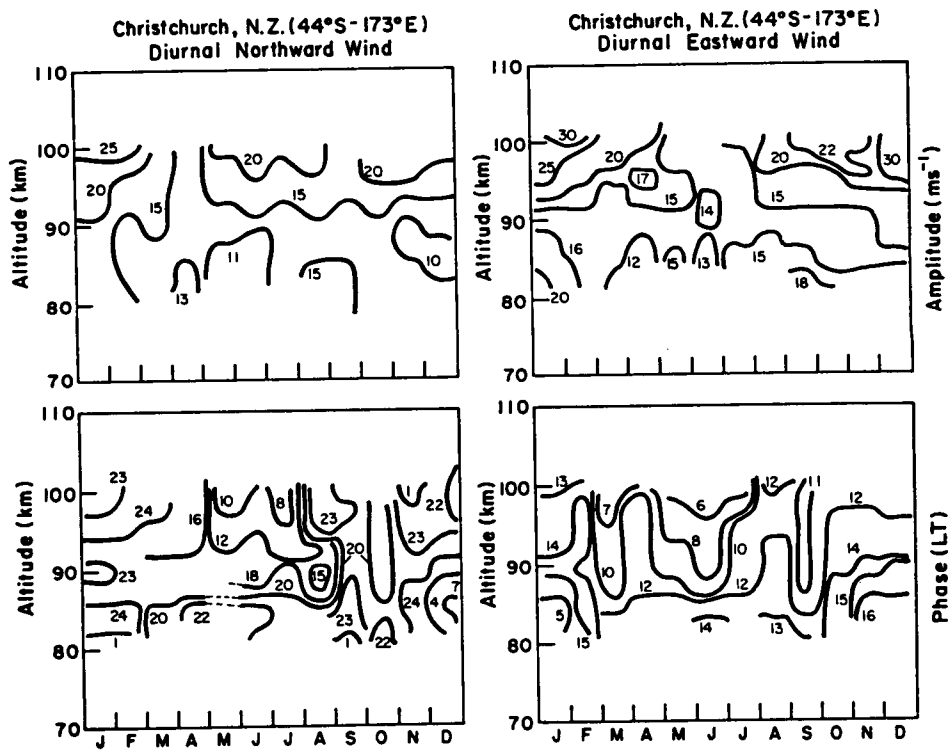


Figure 14. Diurnal tidal contours: Christchurch 1979-80.